

Hobbies

WEEKLY

CONTENTS

	Page
Two Plant Stands - -	37
Mystery "Oracles" -	38
Wood Surface Preparation - -	39
Tin Flower Holder -	39
The Editor's Notebook -	40
Stand Book Rest - -	41
A Paint Sprayer - -	42
Modern Bed Lamp -	42
Radio Joints - - -	43
Metal Toothbrush Rack	44
A Toy Sandwheel - -	45
A Window Box - - -	46

October 27th, 1943

Price Threepence

Vol. 107 No. 2765

WE show here two attractive but simply-made plant stands that can be constructed from ordinary deal or from oak or mahogany, if the latter is available. Many such articles as these can now be seen in the shops made from the wood suggested and finished with stain and polish.

Just an ordinary household set of carpentry tools is all that is needed in making up the two stands, and in addition to the hand and tenon saw, the fretsaw for shaped and curved parts is essential.

Useful Sizes

In the pictures of the finished articles in Fig. 1, the stand, A, measures 8ins. square and 9ins. high, while that at B is rather larger and

TWO ATTRACTIVE PLANT STANDS

measures 10ins. square and 12ins. high. Wood $\frac{1}{2}$ in. thick is required for all parts, but boards $\frac{3}{4}$ in. thick may well be used for such parts as the extreme top member of stand, A, and the edging strips round the top of stand, B.

The little decorative strips to be added to the two or the four sides of stand, B, can be cut from $\frac{1}{2}$ in. or $\frac{3}{16}$ in. wood and glued on.

Dealing first with stand, A, we have two sides measuring 8ins. by 6ins., shaped along their lower edges as in Fig. 2. The measurements here included are ample guide for the setting out in pencil. Then, set

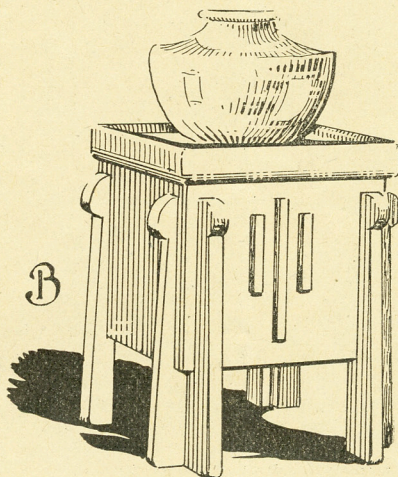
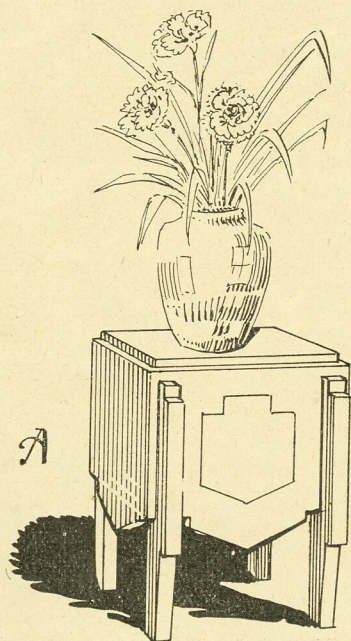
between these two sides, are two others as, B. These are 7ins. by 6ins. and are shaped at the lower edges similarly to sides, A.

After cutting the four sides they must be glued together, and here care must be taken to get them to form a perfect square. A good plan to ensure this is to set the made-up "box" on a flat board or other surface and test the sides with a square. Allow the glue to harden and meanwhile cut four angle blocks as, C, in Fig. 2.

These may be of spare $\frac{1}{2}$ in. wood and are glued in the interior angles and flush with the top surface of the four sides. Not only do these blocks bind the sides together, but they form a good gluing surface for the extreme top, D, of the stand, see Fig. 2 which shows piece, D, broken across to disclose the blocks, C. Piece, D, is $7\frac{1}{2}$ ins. square and the top edges should be slightly rounded off with fine glasspaper.

The Legs

The four legs of the stand are next cut $\frac{1}{2}$ in. wide, thus finishing $\frac{1}{2}$ in. square, the lower simple shaping being cut in with the fretsaw. Each leg is glued to the "box" $\frac{1}{2}$ in. inwards from its vertical edge so the joints between the sides showing on face, B, is conveniently hidden by the up-rights. Then, to further strengthen the legs and to also take the weight of the "box", four simple square blocks, as F, are glued on the inside of each leg as seen in the detail, Fig. 3.



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This completes the stand, except, of course, for a general clean up of all surfaces and the finish of stain, etc. A panel on two of the sides may be outlined as suggested in Fig. 1 and either stained darker than the

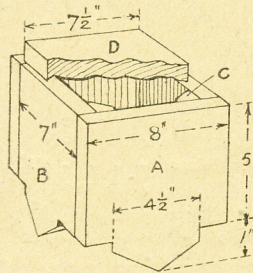


Fig. 2—Box frame of "A" Stand

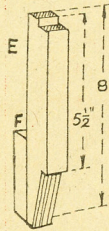


Fig. 3—Leg shape

to stand, A, as far as the "box" portion is concerned. The lower edges, however, of the sides are square, with no shaping, and the top of the stand, G, entirely covers it and is finished around with an edging, see Fig. 4.

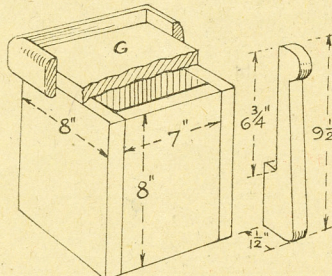


Fig. 4—Square box of "B"

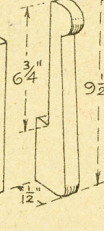


Fig. 5—Second leg shape

surrounding border or made as an overlay of thin wood and glued on.

The design of the stand, B, as seen in Fig. 1, is, constructionally similar

Here again the top is shown cut across in section and shows plainly how the edging comes in relation to the top. The edging strips are 9ins.

long and 1 1/2ins. wide, with their ends mitred to an angle of 45 degrees and two edges rounded off as the section shows in Fig. 4. The eight legs for the stand are cut and shaped as Fig. 5, from wood 9 1/2ins. by 1 1/2ins. Follow the measurements given, and form the set-back 6 1/2ins. down as shown 1/2in. from the back vertical face.

Take care to get the top rounded shape of each leg true to shape, and smooth off edge, as these legs are a conspicuous part of the finished article. It would, in this respect be best first to cut one leg carefully, then clean off any ragged edges of this before using it as a template for drawing round to produce the other three legs. Glue the legs to the box in a similar way to that previously advised for stand, A.

Finally clean up the woodwork and carry out the finishing surfaces as mentioned for the first stand. The simple strips glued on the face can be 1/2in. or 3/16in. thick.

For Guy Fawkes night or Xmas Party try your hand at MAKING MYSTERY "ORACLES"

PERHAPS you will have some very tiny people to entertain on Bonfire Night. If so, why not make a few "oracles"? These are quiet little articles of the firework nature and can be exhibited indoors. If it is a really bad night, therefore, the toddlers need not go out at all and yet see something that splutters and burns.

All you require to make "oracles" is a small amount of saltpetre (potassium nitrate) which can be obtained at chemists. Some water is also needed, a clean (if possible, new) small-sized paint brush and some sheets of paper, of the kind typists use.

The paper must not be too thick, nor yet too flimsy, and if you have several grades to hand it is worth making a few experiments to see which works best. To make an oracle a saturated solution of saltpetre is first prepared. That is, you keep adding the salt to a little water till the liquid obviously cannot hold any more.

Marking the Outline

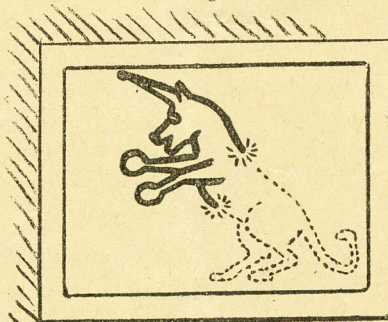
A sheet of the paper is then taken and placed on a clean pad of blotting paper. The sheets being worked with can be any size, but about 8ins. by 8ins. is a convenient dimension.

Now dip the brush into the saltpetre solution and sketch out a simple picture on the paper, exactly as if you were using paint, but seeing to it that all the lines you use are joined together—this being for a reason you will see in a moment. When the brush runs out, re-charge with saltpetre solution but start again well back on the line already drawn—there must be no breaks.

While the paper is wet the line will show quite clearly, but when it dries out your sketch is quite invisible, despite the fact that a definite track of saltpetre is left sunk into the fibre of the paper. When dry the oracle is ready.

Now if you take the sheet and, placing it on a tray, apply to the start of your line the end of a smouldering string (obtained by lighting a piece of string and after a moment blowing the flame out) a smouldering, spluttering spot of light appears on the paper. Really it looks like a little dot of fire.

This smouldering dot starts to



The burning ends running along the lines—really invisible

follow your line (which, remember, is invisible to the onlookers) and throwing out little sparklets steadily traverses it from end to end, thus tracing out, in brown line of charred paper, your drawing. The success or otherwise of an oracle really depends on the skill with which you make the sketch.

First, the line must be continuous, though it may have branches. The

spot of light at the point of junction breaks into two, one going along one line and the other taking the second line. Secondly, you must make your sketch with a line of fairly equal thickness, or the final sketch left on the tray will not look a bit good.

A Frame

To make an oracle look neat, put a pencil or ink line around the space when you draw the sketch, as this gives the impression of a framed blank space which is almost asking for something to appear upon it. Also put a small dot where your line commences so there will be no doubt where to place the smouldering string end.

It makes more fun if you have a question written in pencil or ink across the top of the sheet and the sketch answers it. Thus the question might be, "Who jumped over the moon?"—your sketch below being the outline of a cow.

Should you have any doubt about being able to draw the picture with a connected line make a full-sized draft on another sheet of paper and conduct a few experiments how you would get round it with a brush. Remember lines may branch but must not be disconnected.

Finally, do not give "oracles" too much rough handling after being made; you want as much saltpetre as possible to stay in the fibres of the paper. Store them between two sheets of card till required.

"Oracles" are easily made once you get the hang of things and as there are sure to be cries for more once you start showing them, it is a good idea to turn out a really big number once you commence operations.

The good craftsman should know about preparation of WOOD SURFACES

HAVING prepared the wood, the finish can be applied," says the instructions on the making of a piece of furniture. Do you know, however, just what is meant by "preparing" the wood? A run over with a plane, a rub with glasspaper, is what some amateur woodworkers think it means. It is a grave misunderstanding, because so much depends on a real smooth surface—and the nature of the wood itself.

The ultimate result is usually a crude, unsightly finish. The plane marks show up, including the scratches of the glasspaper. This article, then, is devoted solely to those readers who find it difficult to get a real professional finish on the woodwork articles they make. Generally, it is the finish that is blamed—not the wood surface.

Studying the Wood

The beginner should know just what you would do in order to prepare wood for its finish. In the first instance, you will, we know, consider the wood recommended, which might be white deal or spruce. This is a soft, cheap wood, with odd knots in it. On account of those knots, and the softness of the wood, plus the grain, you will use a sharp, properly-set smoothing plane to remove the roughness or "ripple" produced by a planing machine. You will plane off the minimum of shavings—fine shavings, mere silken wisps, and not thick ribbons.

You will start at one edge of a board and work gradually, in the grain direction, towards the other edge, thereby ensuring that the entire surface is trimmed with the plane. The next operation is smoothing with glasspaper. Being a softwood, the use of S2 paper will be avoided, as this is rather coarse and apt to create deep scores which are difficult to remove by further rubbing with M2 paper and No. 1½ grade paper.

Instead, you will rub the wood with M2 paper, dust it, then rub with No. 1½ paper and No. 0 paper. You will make a point of dusting the wood prior to using a finer grade of glasspaper.

Dusting the Surface

The reason for dusting is obvious. Small particles of the abrasive (glass) become mingled with the wood dust. Consequently, such particles are coarser than those of the finer grades of glasspaper. The latter, rubbing on top of the coarse grit, grinds it into the wood, thereby scoring it deeply in places.

Such scoring may be invisible to the eye. During the rubbing process, however, you may hear the grit "rolling"

or even feel it jarring beneath the glasspaper block. The scoring, although minute, is accentuated with the application of a stain—especially a water stain.

This stain tends to swell the wood and raise the grain, particularly the softer annual ring portions. The wood is apt to be "broken" at the heavier scratches, and if precautions are not taken, such marks will show badly in the finish.

Damping the Wood

The experienced worker, if using deal, and intending to colour it with a water stain, always damps the wood after the final smoothing with No. 1½

grade paper. When dry, the wood is glasspapered again with No. 1½ paper, dusted, then rubbed with No. 0 paper, then dusted again for the finish. Thus, when the water stain is applied, the "grain-raising" will be offset by the preliminary damping.

Now, assuming the wood is to be french polished, the proper polish consists of shellac dissolved in spirits, with a colouring pigment added. Assuming the wood is stained black, some lamp black must be added to the polish to convert it into ebony polish. This will not be necessary, of course, if using a colour polish, i.e., a shellac polish coloured with a pigment which matches the stain.

FLOWER HOLDER FROM A TIN

A SIMPLE holder, or vase, for artificial flowers is shown. It consists of a household cleaner container, a syrup tin lid, a small bolt and nut and a strip of 1/16in. plastic material. A good container is Cleana type, which measures 8½ins. long by 2½ins. in diameter, with five sprinkler holes (for the cleaning powder) into which the stems of the flowers can be inserted.

Now, most of these containers are made from card, with tin tops and bottoms. By bending up handles from ½in. wide strips of plastic material, such as Perspex, these can be conveniently adhered to the card, using a cellulose adhesive.

Assuming you have an empty container, wipe it over with a duster, then solder a small flathead iron bolt to the centre of the bottom. Next, obtain a syrup lid, or a similar lid from a paint tin, etc. Drill a hole in its centre to suit the thickness of the small bolt, which could be ½in.

The lid is secured to the bottom of the container with a nut. The handles are then bent to shape from celluloid material. The whole work is given a coat of bright cellulose paint. When dry, the handles are cemented to

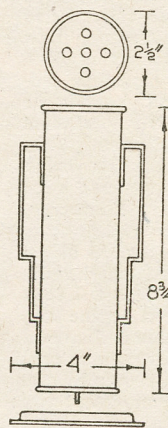
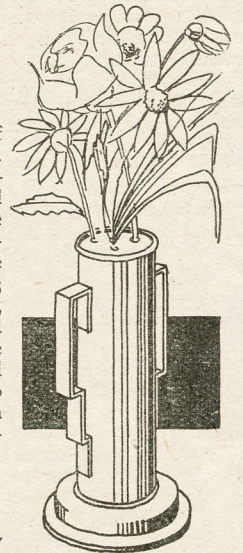
the sides of the container. Stiff cardboard and ordinary glue enable handles to be easily fitted; in this case, plastic wood should be put in at all corners to strengthen the cardboard.

Filling With Sand

You now need some dry sand. Ordinary seashore sand would do. A quantity should be heated on a coal shovel to dry it, after which it is sifted fine and run into the vase holes. You need the container about three-quarters full of fine dry sand. It is the sand which supports the flower stems.

Artificial flowers, of course, can only be used in the holder. These have a stiff wire stem which drives easily into the sand. If desired, you could make a pair of the vases and finish them off with gold or silver paint. The vases, such as they are, were conceived purely for ornamental purposes. They enable you to use up material which would otherwise be waste.

Take care with the painting to get a nice even surface and use glossy paint for preference. If two colours being used allow one to harden first.



In fact, the polish, being coloured, would save using stain, as it colours as it polishes. The first application, applied with a soft, flat brush, will be light. Additional applications, however, deepen the shade, and this should be remembered.

The Four Natural Polishes

The experienced worker never applies light polish over dark woods or dark-stained woods. The coatings of polish show up badly—can be seen to be lying on the darker foundation. The polish must match the colour of the wood, or its stain.

There are four natural (uncoloured) polishes, such as white, button, garnet and orange polish. These polishes consist of shellac dissolved in spirits. No colouring pigment is added. The tint, if any, is caused by the colour of the shellac used.

Garnet polish has a reddish tint, as it is made from natural red shellac. It can be used on oak or mahogany. Button polish is yellowish, and can be applied to boxwood, satinwood and oak. White polish is made from bleached shellac.

It is employed on light-coloured woods which need to be finished in a natural colour, such as whitewood, sycamore, etc. Being a clear, transparent finish, it is excellent for covering a surface bearing transfers. Orange polish, like button polish, may

be coloured with a spirit stain and used as a colour polish.

Sizing Soft Woods

Few amateurs ever bother to size the surfaces of soft timbers prior to applying a stain. Deal and pine are soft and uneven in texture, and rather soak up stain like blotting paper.

As a result, the wood stains darker at the softer patches in the grain—at the softer annual rings, and the general effect is rather spoiled. A preliminary application of thin, hot glue size prevents undue absorption.

Finishing Hardwoods

When using hardwoods, such as mahogany, the wood must, like the softer woods, be properly smoothed, ready for its finish. As in the case of white deal, the smoothing plane is sharpened up and finely-set to deal with any patches of cross grain in the wood, hard knots, etc.

If using mahogany, with attractive figure, a natural finish is often desirable. In such a case, no staining is necessary. Garnet polish is used, but the surface of the wood must be prepared correctly. Assuming it has been lightly trimmed with a smoothing plane, any plane marks and roughness at cross grain patches (usually around knots) is effectively removed with a wood scraper.

A wood scraper is a piece of sheet

steel, about 4ins. by 2½ins. by 1/32in. thick, the edges of which are treated in such a manner as to produce a sharp edge or burr which, scraped on a hardwood, removes fine shavings, much as the edge of a piece of glass.

When scraped, smooth the wood with M2 grade glasspaper, No. 1½ grade, then damped, allowed to dry, and smoothed again with No. 1½ paper, then No. 0 paper. No damping will be necessary if the polish is to be applied directly on the wood.

Generally, to lend tone to the colour of mahogany, a special stain is used. This may consist of bichromate of potash dissolved in hot water. A quantity the size of a small nut, in a pint of water, should suffice. Allow to dry, then dust off the residue.

For Filling

If filling is necessary, use mahogany oil filler, made to creamy consistency with turpentine. Rub it into the grain, then wipe off, thus sealing the pores and crevices in the wood surface. Smooth with No. 0 paper, dust off, and brush on a preliminary coat of polish—a brown polish or the garnet polish. The normal, remaining stages in the french polishing process are then carried out.

If desired, the filler can be dispensed with and the grain sealed by applying extra coats of polish, these being rubbed down between applications.

From the Editor's Notebook

WATCHING the stars is not everybody's cup of tea. But it can become very fascinating apparently if you start young. There seems to be plenty of heavenly bodies to watch. Gilbert Satterthwaite of Ullswater Crescent, Weymouth, started when he was 11 years of age, largely after reading a book called "The Angry Planet". He even went to two lectures on the subject in one day, so great was his interest. Books, lectures, and study followed with keenness and satisfaction. Now the reward. At the age of 14 he is the youngest member of the British Astronomical Association, a friend of Dr. A. F. Alexander, the Dorset astronomer, and is making a full-time job of astronomy. You see where a hobby can lead you? Isn't it fine to have a job which is your hobby, too? I'll say it is.

WHAT would you do with a collection of 35,000 matchbox labels? You could leave them lying about the dining room, there wouldn't be space in the cupboard under the stairs. Anyhow, there it is—Mrs. Margery S. Evans is reputed to have that number. The people who collect

these things are called phillumenists and can be members of a Society for their mutual enjoyment and knowledge. I believe Queen Wilhelmina, and King Farouk collect them, whilst King Chulalongkorn of Siam was the first royal collector. He did rather well in gathering 11,000 labels together. Personally I should not have thought there were so many varieties. But it just shows, doesn't it?

IT'S never too old to start a hobby, you know. Here's Mr. Peter Winton, of Carlton Avenue, East Wembley, who at the age of 60—15 years ago—began modelling old-time horse-drawn and hand-borne coaches. Now he has over 30 of them—all of accurate interest. Mr. Winton should know, because, many years ago, he helped to build gigs, hansoms and coaches in Edinburgh. His first effort was a hansom cab, but he has since made replicas of the London Lord Mayor's coach, the gold coach of King George I, the victoria, sedan chairs, etc. By the way, the design I published in the issue of October 13th was a very popular one. Being a simple one it seemed the most suitable from the many varieties

which were at one time in use. Like motor car bodies, you know, they varied in style and "body work".

YOUNG Bill Nursey of Hout Bay, Cape Town takes Hobbies Weekly regularly, having a subscription copy sent regularly from England. So do lots of others in South Africa, but the point is that young Bill's copies don't cost him anything! He enters the toys and models he makes in exhibitions and then uses the money prizes he is awarded to pay to have his Hobbies sent out to him. Not a bad idea, is it? His last subscription money, I find, came as a result of 2nd Prize for a Noah's Ark, and 3rd for a Weather House at the Rosebank Agricultural Show. Well done, Bill!

WILL readers remember it is often impossible to supply back numbers of a definite date?—Almost all issues are sold out because of the shortage of paper, although in a few cases I can supply an odd copy. In any case back numbers are not supplied in "a bundle of old copies" as some readers suggest!

The Editor

A handy movable stand, suitable for chair reading

LOW STAND BOOK REST

MOST readers are acquainted with the book rest which lies across the arms of a chair and enables the heaviest work to be read in comfort. Valuable as it is, it is of no use without the particular pattern of chair it is intended for, so here is a design which can be used while seated in any chair, as it stands between the legs of the reader. It can also be used for other purposes; for example, painting and sketching, and, as the book board can be swung to a vertical position, as an enlarging easel. Readers will doubtlessly find other uses for it.

The whole article can be made from a short piece of deal, except the book board, which can be made of any thin wood available, imitation plywood or other suitable substitute.

A side and front elevation is given in Fig. 1 with dimensions. These will be found convenient for most people, so no means of adjustment in the height has been considered necessary. For the work, use a wood 1in. thick if possible; in any case not less than $\frac{3}{4}$ in. to make a firm piece of work.

Make a start by cutting two pieces of 1in. by 3in. wood for the feet. Plane them to size and cut notches in both to half the width, one notch being cut from the top down, and the other from the bottom upwards, so that both can fit together at right angles. It should be noted here that while the notch in one piece is in the centre, the notch in the other is out of centre, being towards the front, as in Fig. 2, A.

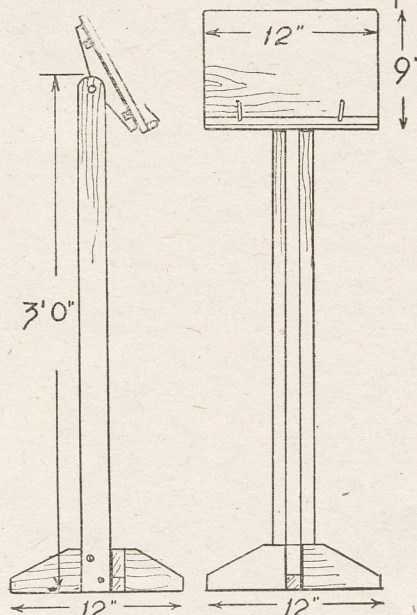


Fig. 1—Side and front elevation

This is to allow the pillar, which fits behind the front cross piece, to come central. Bevel off the ends of each piece, not too much, to leave about 4ins. flat at the top. Make a tight joint, then glue together. No nails should be needed with a good joint.

The Pillar

For the pillar, cut two lengths of 1in. by 2in. wood to length given. Plane the edges and trim the tops to a semicircle. In the middle of each semicircle bore a $\frac{1}{4}$ in. hole. Get these holes in line, as afterwards a 4in. bolt will run through them, fitted with a wing nut, as at B, to hold the book board at any desired angle. Fix these pillar pieces to the feet, just behind the cross piece, with screws.

To ensure the fixing being parallel, slip a spare piece of the wood between the pillar pieces, just below the top ends, and push the bolt through and tighten up, then screw them to the feet.

As stated already, for the book board any thin wood or wood substitute can be employed. Cut it to the size 12ins. by 9ins., (Fig. 1) and slightly round off the top corners. Other details of this part of the rest are shown in Fig. 3.

A back piece, C, is cut from similar thickness wood to the pillars. Cut it to the size given, and in the centre strike a 2in. circle where shown. Bore a $\frac{1}{4}$ in. hole in the centre of the side for the fixing bolt to enter. Now cut the part to the shape, and in the bottom edge at 1in. from each end, saw out $\frac{1}{2}$ in. by $\frac{1}{2}$ in. notches. Fix the piece to the middle of the book board behind.

Cut two strips of $\frac{1}{2}$ in. by $\frac{1}{2}$ in. wood, 11ins. long, run these through the notches in part, C, to half their length and then screw them to the board, to stiffen the whole, as in the

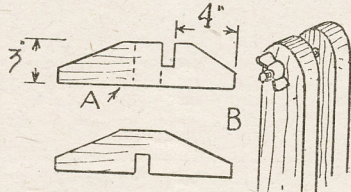


Fig. 2—Feet and pillar top

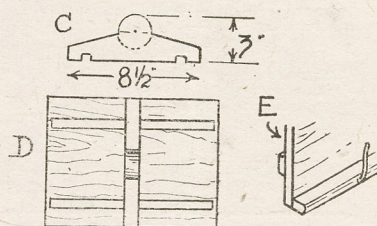
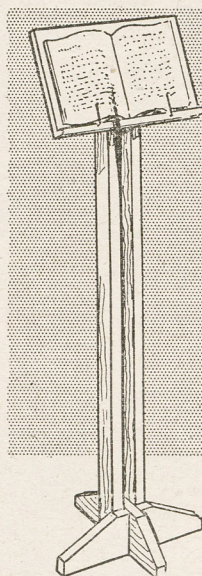


Fig. 3—Detail of book rest portion



back view, D. Turn the board round, and at the bottom, as a book rest, screw and glue a strip along as at detail E. This strip can be $\frac{1}{2}$ in. thick and $\frac{1}{2}$ in. wide. Round off its outer edge.

Finish

Now go all over the article with glasspaper to make the wood quite smooth. Fit the book rest between the pillars; it should be held firmly at any angle by merely tightening the bolt. It will be as well to purchase the bolt first, then if a thicker bolt than $\frac{1}{2}$ in. has to be used (supplies of all these items are not so varied now as they used to be), the holes can be bored to suit.

The back rest can be stained a nice oak colour and varnished. It is a good plan after staining the wood to apply a coat of size, or a table spoonful of glue diluted to twice or thrice its bulk with hot water, which will serve equally well. Then if rubbed down lightly a single coat of varnish will suffice to impart a glossy surface. Of course, the article can be painted, and if an enamel paint is used, should give excellent results.

Holding Clips

To finish off the job, fit a pair of music clips (they can be bought at any music shop), such as are fitted to a piano, to keep the leaves of the book from flying open. These are easily fitted, only requiring a suitable hole to be bored in the "rest" strip for them to work in. The holes, by the way, should be a close fit.

The height of the stand can be made greater by having longer column pieces.

The home handyman, with a cleaner, can have an efficient PAINT SPRAYER

MANY of our readers have made enquiries, from time to time, for a suggestion for spraying their finished models or articles instead of having to paint them with a brush. They will undoubtedly be pleased to know that there is now available a Spray Gun which is quite simple to use in conjunction with almost any type of vacuum cleaner, and, having tested one out, we can recommend it for use on ordinary articles.

It is simple to operate and will use cellulose paint, oil paint, stains, distemper, etc. A picture of it in use is shown here. Its application is



The Spray Gun in operation

for numerous occasions by the handyman at home, and the amateur. It is not altogether suitable for small models, but for painting fairly large toys and ordinary home carpentry and painting jobs it is ideal.

Air Pressure from Cleaner

As you see, a jar of paint fits below the pistol type of sprayer in which a trigger action is incorporated at the back. A lead from this passes to the vacuum cleaner, which in turn is linked up to the electric current. The junction to the cleaner is made through the "blower" end rather than the suction pipe. Thus an effective and forceful current of air passes down the pipe and through the gun as the trigger on the back is pressed.

The force of air passing across the top of the jar sucks up the paint or stain which it contains and forces it through the spray nozzle at the front end of the gun. By an ingenious

arrangement of simple adjustments a large or small spray can be obtained and of course the area which it covers is controlled by the distance and angle at which the sprayer is held. Large surfaces can be covered very quickly by holding the gun away from the work, whereas if it is held closely then a small area is covered.

The principal point is to get the right consistency of liquid, because obviously, if it is too thick it would clog the gun and if too thin it would not give a sufficient coat.

For Colours and Control

The whole apparatus is quite simple to use if one follows the clear instructions. The special jars are made to fit by a screw action on the underside of the gun and can be utilized for the

various colours as required. The spray can be controlled after a very short trial, and careful manipulation of the trigger action which operates the spray effected.

The Spray Gun can be used with almost any ordinary vacuum cleaner. It is supplied by the Domestic Supply Co., 341 Regent's Park Road, London, N.3, at a cost of 75/-, complete with spare jars, instructions and everything ready to start.

The price may seem high for the amateur, but those who undertake home work of painting and distemping in the house, even apart from the making of toys, will soon realise that the outlay is well worth it. The resulting finish is far above the average painted result and the work can easily be given quite a professional style.

A MODERN BED LAMP

HERE are simple details for making a useful electric light fitted to the head of any wooden bedstead. Its cost is small, and its materials easily and cheaply obtained. The parchment will be the most expensive item.

Cut a circle 4ins. in diameter from the piece of wood with a fretsaw. In the centre of this, cut a smaller circle, the size of the top of the bulb holder, as in (Fig. 1).

The Holder

Next cut a lin. cube of wood, and nail on to the outside of the large circle, just overlapping the edge (Fig. 1).

Remove the screw ring from the bulb holder, push the latter through the hole, and replace the screw ring. (Exactly in the manner of fitting a lamp shade to it). You then have a circle of wood, with the lampholder firmly fixed in the centre (Fig. 2).

Next cut your parchment so it measures 8ins. high by 16ins. long,

MATERIALS NEEDED

- 1 bulb holder and bulb.
- Length of flex, from wall plug centre head of bed, plus 1yd. for switch.
- 1 torpedo switch.
- 1 plug.
- 18ins. of pretty frilling.
- 2 1½ in. screws.
- 1 paper clip and a few panel pins.
- 6 drawing pins.
- Parchment of warm gold or orange colour.
- Wood measuring 4ins. by 4ins. by ½ in. and 1 in. square.

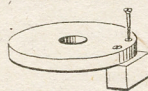


Fig. 1

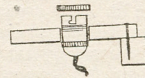


Fig. 2

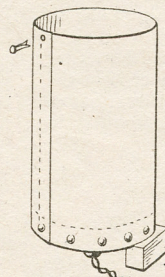


Fig. 3

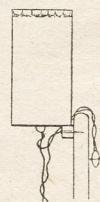


Fig. 4

and fix it round the circle with drawing pins. These should be equally spaced, with the join overlapping at the back—opposite side to the lin. block that is nailed underneath. Secure the join with a paper fastener (Fig. 3) and stick on frilling with good glue.

Bed Fixing

The lamp completed, the next step is to screw it behind the back of the bed, so the lamp is in the centre of the head of the bed (Fig. 4).

It is a simple job to fix the switch to the flex, but make sure that you break the positive wire. If in any doubt, the safest way is to ask somebody who has a knowledge of electricity to fix it for you.

Practical constructional hints how the amateur can make SOUND RADIO JOINTS

IN radio receivers sound joints are perhaps more essential than in any other kind of electrical apparatus. In some places the signal currents flowing are so minute only the most sensitive measuring instruments can indicate them. So it will be seen how necessary proper connections are.

Terminal Connections

If these are loose they will cause crackling, weak reception, or even

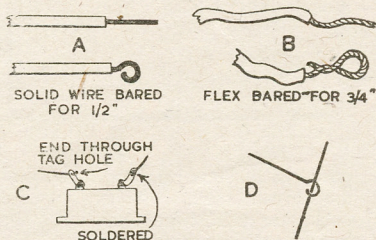


Fig. 1—How to make proper joints

prevent signals being heard altogether. Besides being tight, loose, straggly ends of wire should never be left. Fairly high voltages are necessary in some parts of the circuit; loose ends may cause short-circuits which could damage some of the parts.

"A" and "B" in Fig. 1 illustrates how terminal connections should be made. Small pliers are always useful for handling wire. Do not make the loops in an anti-clockwise direction or they will usually be straightened out and come off when the terminal is screwed down.

With flex, twist all the strands together, then make a loop to fit over the terminal. This will prevent battery leads being tugged away.

Soldered Connections

Some components require soldering. Actually wiring-up in this way is quicker, neater, more compact and provides better joints. It is always best to use tinned-copper wire, as this

requires no cleaning. If cored solder is used excellent joints can be made easily. It is only necessary to apply the solder and hot iron at the required point, no scraping being necessary.

When soldering in resistors, condensers, and similar small parts, never keep the soldering iron in contact longer than necessary. Prolonged application will begin to melt the wax in the component, and may unfasten the internal joints.

Soldering tags can often be used, as in "C", Fig. 1. When wires are to be joined the end of one lead may be looped round the wire it is to be joined to, for greater strength, as in "D".

Lead Indications

When using ordinary flex for battery leads, the ends may be identified as illustrated in Fig. 2. Knots are tied in the wire to indicate positive, two knots being used for H.T. Plus 2.

The standard colour code for battery leads is as follows:—L.T. Plus=Pink. L.T. Minus and H.T. Minus=Black. 1st H.T. tapping=Blue. 2nd H.T.

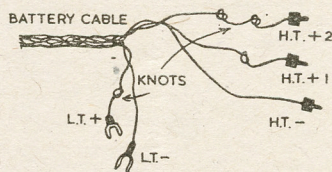


Fig. 2—How to indicate lead connections simply

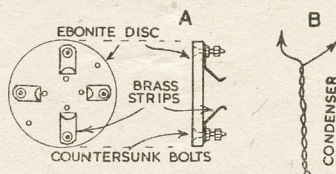


Fig. 3—Some easily-contrived parts

tapping=Green. 3rd H.T. tapping=Yellow. Maximum H.T.=Red. This may help in identifying unknown connections, or may be followed if coloured wire is bought.

Simple Parts

If a valveholder is wanted and is not to hand, "A" in Fig. 3 shows how one can be contrived. A disc about 1 1/2 in. in diameter has four small holes drilled so that the valve-legs will pass through them. (Their spacing can be found from the valve itself.)

When the valve is pushed through the legs touch brass strips held in place by means of small bolts. (6 B.A. bolts and nuts are readily available and always useful in construction.) The valve should be inserted from the bare side of the disc.

An item which can be made in a moment is shown in "B". Solid insulated connecting wire is used and the capacity will depend upon the length of the twisted portions. (2 in. is usually suitable.) Some commercial receivers use such condensers in series with the aerial, and for similar purposes. The capacity can be readily changed by twisting or untwisting the leads, and will usually be up to about .00005 mfd.

The second of our articles helpful to the beginner, but equally instructive to those radio constructors requiring the best results. Further similar articles will follow.

Larger condensers can be made by arranging two metal plates together, with insulating material between.

Insulated terminals for aerial, phones or speaker, etc., can be arranged by cutting washers from odd scraps of ebonite or other insulating material. As shown in Fig. 4, one small washer fits between the two larger ones, the chassis or terminal strip being drilled with 1/4 in. holes to accommodate the former. This assures the terminals cannot move sideways and short to the metal.

Where wood is used, terminals may be mounted directly on this. But the wood should be dry and varnished before use, and the terminals be at least 1 in. apart. Otherwise reception may be weakened.

Switches, etc.

Dust, fluff, and traces of flux can cause trouble when they come between metal surfaces which should make good contact. If old valveholders are used the sockets may need cleaning. The legs of valves, too, may need attention as a bad contact here would almost certainly prevent the receiver working at all.

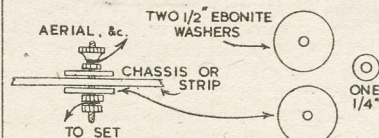


Fig. 4—How to insulate terminals

When switches become noisy, the contacts require cleaning. Battery connectors corrode in time and can result in a background of continuous fizzling and crackling sounds.

As a rule it is worth while keeping all connections tight and clean. This will assure best results and may avoid the trouble of afterwards having to look for some fault which spoils reception.

Fixing the Blade of a Screwdriver

TO fix the blade of a screwdriver in its shaft, make a cut in the back end of the screwdriver blade with a hacksaw, and drive it in the handle. The two ends will then open out and hold the blade securely.

Readers of our Metalwork articles can make this TOOTHBRUSH RACK

THIS very useful and decorative rack would be an asset to any bathroom. In addition to possessing holders for four toothbrushes, it also has a fitting designed to hold a water tumbler. It can be made in your spare time, with very little difficulty if you follow the instructions and the explanatory diagrams.

To make it, use if possible fairly stout material, about 16s wire gauge (about one sixteenth of an inch thick). The use of too thin material may cause the finished job to lack stability.

For constructional purposes, we will divide the rack into three main

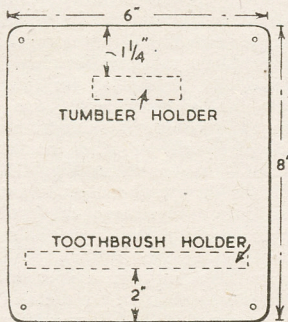


Fig. 1—Detail of back plate

parts—the base or back-plate, the tumbler holder, and the toothbrush rack—and to avoid confusion, they will be dealt with separately.

The Back-Plate

Cut a piece of flat material to the measurements as shown in Fig. 1, trimming off the corners. Then file off all burrs and sharp corners, smoothing afterwards with emery cloth.

Mark off the position of the screw holes ready for punching. If you have a portable metal drill you will, of course use that, but do not try to do the job with your woodworking drill—you will only spoil the bit. In the absence of a drill, lay the backplate on a flat piece of hardwood, or a piece of lead (which is the ideal thing for the job if you can get it).

Punch the holes through to a size large enough to accommodate your wall screws, filing off the burr on the back side. You will find that you have put a small countersink round the hole, and this must be hammered flat again, or it will prevent the plate from lying flush on the wall.

If this closes up the holes until they are too small for your screws, you can easily ream them out with the tang of

the file or similar type of tool.

The Tumbler Holder

The primary aim when making the tumbler holder is to make sure it will, when finished, hold a glass without sagging. To achieve this necessary rigidity it is best to use similar material to the backplate. You will require a strip 12ins. long by 3/4in. wide, and it is easier to file up and smooth the edges before going any further.

Mark the strip out as per details in Fig. 2. Bend the 1 1/2in. piece at each end over at right angles with the aid of the bending irons and cramps as shown in diagram, using your wood mallet to avoid marking. Next, bend the middle 8in. portion into a perfect circle by wrapping round a table leg, a straight sided beaker, or even the end of an outside water-spout.

You will find that the 8in. portion will make a 2 1/2in. circle, which is just the right size to accommodate an average tumbler. The size of a tumbler is usually 2 1/4ins. in diameter, 4 1/2ins.

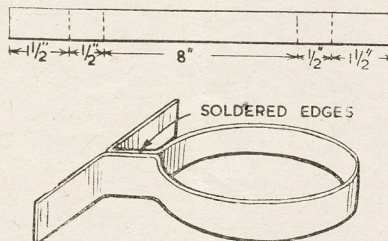


Fig. 2—The tumbler holder strip

dead with a 2in. bottom.

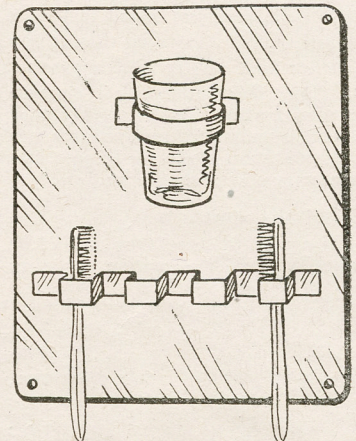
If you intend to use one of the fancy shaped bakelite tumblers, or any other kind that is not the standard measurement, you will naturally have to make the necessary allowance when marking out your initial strip. To complete the fitting, squeeze the 3/4in. portions together with a pair of pliers and solder along the top and bottom edges.

For the toothbrush rack you require a strip of material exactly 7 3/8ins. by 5/8in. wide, and again it is better to file and smooth before bending. Using the bending irons and cramps and starting at one end, fold the strip (Fig. 3), taking care to bend *exactly* on the marks in order to achieve a uniform finish.

To Assemble

Now you have completed the three separate portions, all that is required is to fit them together and complete the job.

Take the backplate and mark the



positions of both tumbler holder and toothbrush rack. Apply flux to backplate and fittings, and place the latter in their correct positions. Take particular care to see they both lie square, perfectly central and parallel with the top and bottom edges of the backplate, as nothing spoils a job so much as faulty alignment.

Then, with a well heated iron, firmly solder the fittings to the backplate, going slowly to allow the solder to penetrate beneath the edges, and leave a slight body of solder for additional support.

Cleaning

After soldering, clean off all traces of flux with a damp rag and file smooth. Do not file all the solder off again. Then give the whole job a good rubbing over with fine emery cloth to prepare the surface for finishing off.

Warm slightly before a fire to dry off all dampness, and impart a good workmanlike finish to the job by

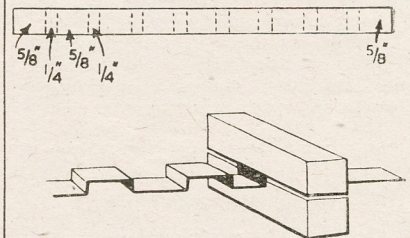


Fig. 3—Binding brush holder

giving three coats of good enamel, choosing whatever colours you consider will best fit into the decoration scheme of your bathroom.

A cream background, with the fittings done in emerald green looks very smart and will make the rack a real tribute to your workmanship.

A TOY SANDWHEEL

ALL children like playing with sand, and they also like toys which work. The sandwheel described, combines the merits of both. The toy consists, basically, of an upright column of wood on which is mounted a wheel which has a number of small "buckets" mounted around its edge.

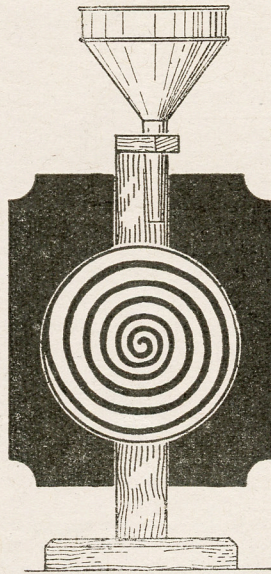
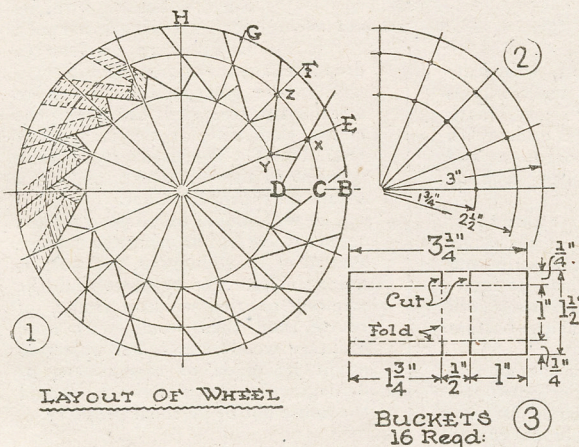
Suspended over it is a tin funnel. Fine sand is poured through the funnel. As it escapes, it impinges on the buckets in the manner of a water mill. The wheel spins merrily round. The sand which falls out again at the bottom is replaced in the funnel and so the wheel continues to turn.

Buckets and Wheel

Though the diagrams may give the impression that one needs be a skilled geometrician to lay out the wheel, such is not the case. If the simple instructions are followed, it will be found that the buckets more or less fall into place.

First we must make sixteen buckets. These are of card; postcards do very well. Their shape can be seen in Fig. 4; the lay-out is as in Fig. 3. The card will fold much more neatly and accurately if the dotted lines in Fig. 3 are first scored lightly with a penknife blade, run along the edge of a steel rule. It is essential that all these buckets be made accurately and all alike.

The wheel is made from two discs of thick card, of 3ins. radius. One of them must be laid out as in Fig. 2 and seen also in Fig. 1. From the centre, describe three circles of radii 1½ins., 2½ins. and 3ins. Draw in the two diameter lines at right angles to each other (i.e. passing through points H and B). Then draw in 45 degree lines (i.e. passing through F) and finally halve HF, so that 22½ degree lines can be drawn through G and E, etc.



In other words, the circumference of the circle is stepped off into sixteen equal parts. Make dots at points X Y Z etc. The wheel will look like Fig. 2 at this stage, though Fig. 2 shows only a quarter of the wheel.

Now take one bucket, and apply some strong liquid glue to the tabs on one side. Lay it on the wheel so its sides touch dots X Y and Z. Note that corner Y is a *right angle*. Hold the bucket down for a short time until the glue "takes". Then apply another bucket to the next but one set of dots, and continue thus until you have eight buckets placed. Without gluing, place the other disc over them and on top of this place a fairly heavy book. Leave for the glue to set—say overnight.

It will now be an easy matter to put in the other eight buckets, as they simply fall in place. As well as gluing the flaps, put some glue on the sides

so the buckets are not only attached to the wheel side, but also to each other.

Obtain a cotton reel and cut it so it is exactly one inch long (Fig. 6). This goes between the two discs at the centre. Glue it in, and apply glue to the other flaps of the buckets. Apply the other disc and let the wheel dry under some slight pressure. The resulting wheel is quite strong. A coat of shellac varnish is recommended. A spiral or other design can be painted on one side.

Pillar and Funnel Support

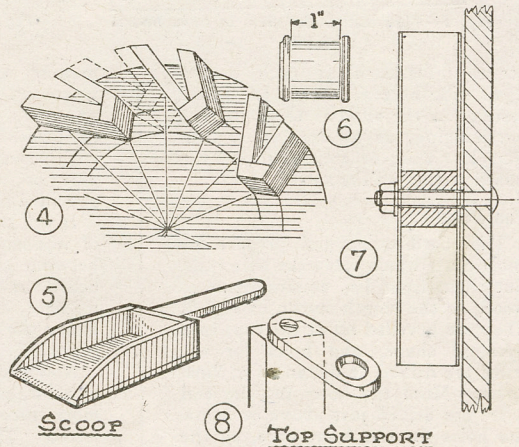
The rest of the job is quickly done. The upright is about 12ins. long and of approximately 1½ins. by ¾in. section. The base is of any convenient size, say 6ins. by 2ins. by 1in. Do not merely nail the upright to the base, make a strong neat job by using a housing or dovetail joint. Do not have the base too small as the model will overbalance.

Half-way up the pillar, a hole is drilled to take, as a fairly tight fit, a $\frac{1}{4}$ in. bolt about 2 $\frac{1}{2}$ ins. long. This is the axle for the wheel (Fig. 7). Washers are placed between the wheel and the pillar and also under the nut. The wheel should spin easily but not sloppily.

Fig. 8 shows a support for the funnel. The latter is purchased ready-made from any oilshop. The exact size of the support is best found by experiment. One end is screwed to the top of the pillar and is made to pivot slightly so the best position for the funnel can be found.

Fig. 5 shows a wooden scoop which can be made of odd scraps of wood.

If one can spare the wood, a large tray should be made in which to stand the sandwheel, but otherwise an old tin tray will do. The sand is silver sand, obtainable from gardening-supplies shops quite cheaply. Common building sand is not suitable.



Have a flower display without a garden by making A WINDOW BOX

SO many people, nowadays, living in rooms and flats, and not enjoying the use of a garden, are obliged to tend and display their flowers on the window sill. Even with a garden, it cannot be denied that a row of flower pots in bloom, on any window sill looks pleasant, both from the outside and inside as well.

As the average sill, however, is not really broad enough to provide a safe harbour for the pots, a simple board arrangement, as that illustrated is invaluable. It supplies room for a good number of flower pots, and, being fitted with two rails, better ensures the safety of the pots in a high wind.

The Base Board

A plan of the board is given in Fig. 1. Its length will, obviously, depend on the width of the window. It should be 4ins. longer than the sill, so overlapping at each end some 2ins., to allow for a batten, screwed to the board at both ends.

As the width of the board is 12ins., as shown in the diagram, two pieces or more will be required, glued and dowelled together to make it. If tongued and grooved boards are available, the dowels will, of course, not be required. The boards can be any thickness from $\frac{3}{4}$ in. to 1in.

Cut away at each of the back corners to allow the board to cover the sill up to the window frame, then

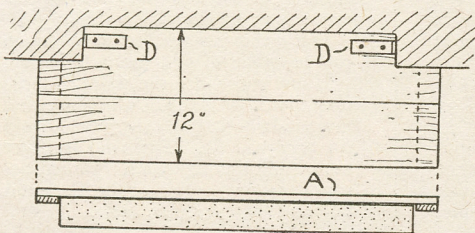


Fig. 1—Plan and front view of base board in place

screw underneath at each end a 1 $\frac{1}{2}$ in. wide batten, so that the board resting on the sill has these battens overhanging, as at front view, A, in Fig. 1. This, of course, shows the board resting on the sill.

The Posts

The board fitting well, prepare the short posts which carry the wire rails. Cut them from 1in. square strips of wood, to the length shown in Fig. 2. They are bevelled off at the tops to a pyramid shape, and holes for the wires are drilled at distances of 2ins. apart. Mind the holes for the end wires are drilled just above or below the holes for the front ones, so the

wires can pass freely and not foul each other.

The posts are then dowelled to the board in the position seen in the general view of the completed article. They should be positioned to stand $\frac{1}{2}$ in. away from the edges of the board. Make close joints, and glue the posts securely in place.

Now prepare some strips for edging the board on its front and ends. The strips should be $\frac{3}{4}$ in. thick and as wide as the combined thickness of the board and battens. Bevel the edges of these strips, then glue and nail them round the board, mitring the corners. Now clean up the work with glasspaper.

As it is desirable for the board to rest level, and usually the sill slopes a little to allow rain to run off, a pair of wooden blocks, as shown at C, Fig. 2 (a section across the board), should be fixed beneath for that purpose.

Get it Level

Try the board on the sill, then place two wedge-shaped strips of wood underneath it, and tap them with a hammer until they raise the board quite level. Test this with a spirit level, or if a level is not available, with a glass of water, the latter

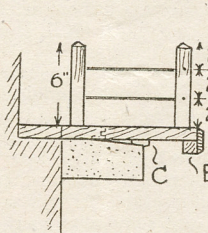


Fig. 2—An end view

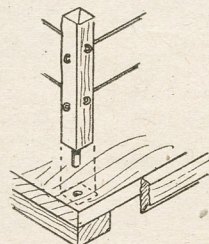


Fig. 3—Post and wiring

with creosote, in fact, and would stand the weather well, but would not look so pleasing, of course. If there is any Solignum, the green kind about, it could well be employed, being a preservative and looking well at the same time.

Wire Rails

The wire rails can now be fixed. Choose a stout wire for this part, and drill the holes in the posts to suit it. A fairly tight fit is desirable. Cut the wire rails to length, allowing $\frac{1}{2}$ in. at each end extra. Push the wires through the holes and, with the pliers, bend the protruding end ring shape to keep the wires from working out. The detail, Fig. 3, will show this and other points already dealt with. If galvanised iron wire is used it will not rust, but if iron wire, then it is wise to paint it or the rail will soon rust it.

The completed board should now be securely fixed in position on the sill. A note of warning is not out of place here. Make quite certain the fixing is a secure one, because if through any high winds or other reason, the board should fall, there might well be most unpleasant results. Such a board, with its accompanying flower pots, would prove no joke to drop on anyone underneath.

A simple and good fixing, is to screw a 4in. steel shelf bracket to the board, each side, at the rear, as at D-D, Fig. 1. The brackets are then screwed to the brickwork, making a secure job if properly done.

The wall should be plugged for the screws to enter, but using the modern system of Rawlplugging, the work is quite simple. The brackets could be screwed to the window frame, of course, and then would only need ordinary wood-screws, but objection might be made to this course, as damaging to the woodwork, should the house not be personal property.

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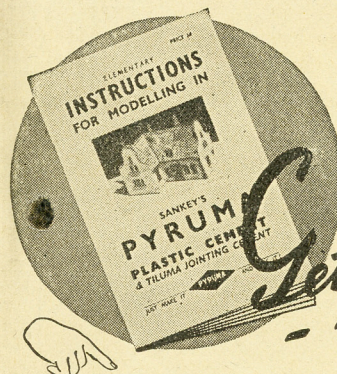
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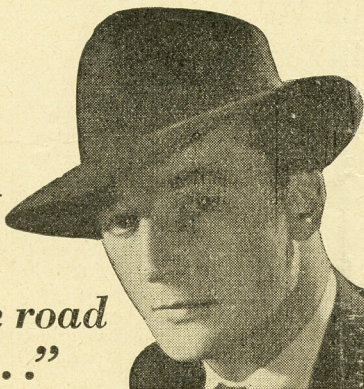
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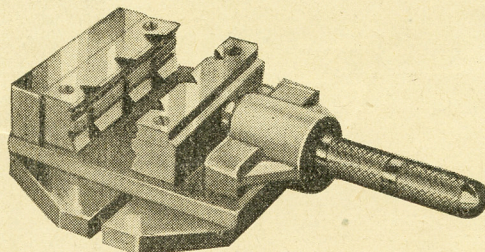
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